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EVALUATION OF THE EFFECTIVENESS OF INSTRUCTION IN AGRICULTURAL MECHANICS FOR VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTER NON-FARMING OCCUPATIONS.

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TO EVALUATE THE EFFECTIVENESS OF A NEW PROGRAM, A STUDY WAS MADE TO DETERMINE -- (1) OCCUPATIONS ENTERED, (2) EFFECT OF NUMBER OF YEARS IN VOCATIONAL AGRICULTURE ON OCCUPATIONAL CHOICE, (3) MECHANICAL SKILLS USEFUL IN THE OCCUPATION, (4) ADDITIONAL SKILLS NEEDED, AND (5) CHANGES NEEDED IN THE COURSE OF STUDY. THE SAMPLE INCLUDED 802 FORMER STUDENTS WHO RETURNED QUESTIONNAIRES TO 147 OF THE 326 VOCATIONAL AGRICULTURE TEACHERS IN THE STATE. OF THE FORMER STUDENTS AVAILABLE FOR EMPLOYMENT AFTER LEAVING SCHOOL, 86 PERCENT ENTERED OCCUPATIONS OTHER THAN FARMING, AND 73 PERCENT WERE EMPLOYED IN THE SAME COUNTY IN WHICH THEY ATTENDED HIGH SCHOOL. THE HIGHEST FREQUENCIES OF EMPLOYMENT OCCURRED IN THE MANUFACTURING INDUSTRIES AT THE UNSKILLED OR SEMISKILLED LEVEL. SKILLS ACQUIRED IN AGRICULTURAL MECHANICS WERE DEEMED USEFUL BY 82 PERCENT, AND 32 PERCENT INDICATED A NEED FOR ADDITIONAL SKILLS. USEFUL SKILLS WERE ACQUIRED IN MACHINERY MAINTENANCE, WOODWORK, ELECTRICITY, CARPENTRY, AND TOOL FITTING. ROPE WORK, GLAZING, HOT-METAL, AND DRAWING WERE NOT USEFUL. THE IMPORTANT ADDITIONAL SKILLS NEEDED WERE MACHINERY MAINTENANCE, BLUEPRINT READING, GASOLINE ENGINE MAINTENANCE, AND WELDING. RECOMMENDATIONS WERE MADE TO INCREASE EMPHASIS ON AGRICULTURAL MECHANICS, IMPROVE FACILITIES, AND CONTINUE DEVELOPMENT OF THE AGRICULTURAL MECHANICS CURRICULUM. (JM)

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FOREWORD

Farm mechanization and improved farm management practices have reduced the job opportunities in farming so that relatively fewer boys who complete vocational agriculture curriculums in secondary schools find employment on farms. Numerous students enter occupations other than farming, many of which are agriculturally related. Supervisors and teacher trainers in agricultural education in Arkansas have recognized the changing nature of agricultural education and have suggested changes in the content and method of vocational agriculture curriculums in secondary schools. One major revision involved an increased emphasis in the scope and content of agricultural mechanics. This has been designed to provide basic skills needed in farming and in many non-farming occupations.

This study was designed to evaluate the effectiveness of instruction in agricultural mechanics in light of the new curriculum. The evaluation was concerned with the extent to which agricultural mechanics provided needed skills for non-farming occupations. The findings of the study were used to suggest some changes which were designed to improve the effectiveness of the agricultural mechanics instruction in vocational agriculture. These modifications should improve the employability of vocational agriculture students who enter non-farming occupations.

This study was conducted by Dr. Roy W. Roberts, Professor Emeritus of Vocational Education. The agricultural education staff of the Arkansas State Department of Education and the teacher education staff of the Department of Vocational Teacher Education of the University of Arkansas assisted in the preparation of the manuscript for this monograph.

Fayetteville, Arkansas
July 1965

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EVALUATION OF THE EFFECTIVENESS OF INSTRUCTION IN AGRICULTURAL MECHANICS FOR VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTER NON-FARMING OCCUPATIONS

CHAPTER I

INTRODUCTION

The Vocational Education Act of 1963 with its increased authorizations of Federal funds, and emphases on inaugurating new programs and updating existing ones, has directed nationwide attention to vocational education. The special provisions for research in the new Act has resulted in a variety of research and demonstration projects designed to evaluate existing procedures and test out new ones in the light of new objectives.

The study reported in this monograph was initiated to determine how well the new program in agricultural mechanics was meeting the needs of young persons who were enrolled in vocational agriculture in the Arkansas secondary schools and who entered occupations other than farming. The purpose of the study was primarily one of providing information that may be used in curriculum improvement in agricultural mechanics.

The Problem

The public schools of Arkansas in 1964-65 offered curriculums in vocational agriculture in 273 of the State's 411 school districts. These districts employed 326 teachers of vocational agriculture. The districts in a few of the larger cities and some of the small rural areas were not offering this subject. A total of 19,791 students were enrolled in high school classes in vocational agriculture in the school year 1964-65.

This represented about 32 percent of the total number of boys enrolled in grades nine through twelve in that year.

Reports from teachers of vocational agriculture in Arkansas for the 4-year period ending December 31, 1963, indicated that about 39 percent of former vocational agriculture students who graduated or dropped out of high school during that period entered occupations not related to agriculture, and 19 percent entered non-farming occupations related to agriculture. Twenty percent entered college and the remaining 22 percent entered a farming occupation.

About 28 percent of the number of students available for employment after high school graduation entered farming, 23 percent entered occupations related to farming and the remaining 49 percent entered occupations not related to farming. These percentages were arrived at by omitting from the total the number who entered college, the number who entered military service and the number whose occupation was unknown.

The state staff in vocational agriculture has recognized the fact that many rural boys in Arkansas are not entering the occupation of farming and has suggested changes in courses of study in vocational agriculture designed to better meet the vocational needs of students enrolled in vocational agriculture. The changes consist of (1) emphasizing, in agricultural mechanics, a variety of shop skills designed for use in farming and non-farming occupations; and (2) the organization of subject matter in agriculture to emphasize principles of soils, plant science, animal science, business management, and leadership, applicable to farming and some non-farming occupations. This type of curriculum procedure appeared to be more feasible than attempting to offer a variety of

vocational distributive and industrial education courses in each school, because of the increased cost of these courses, the difficulty of adding a variety of courses for small numbers of students and the almost impossible task of finding qualified personnel to teach the wide variety of courses. Then too, vocational agriculture has been offered in most of these schools during the past 25 or 30 years and such a background of tradition has enabled qualified teachers of vocational agriculture to better understand the vocational needs of students from rural areas, and meet these needs in properly oriented courses. This is especially true in the case of the course in agricultural mechanics in which it is feasible to offer mechanics courses involving clusters of mechanical skills applicable to various occupations both of a farming and non-farming nature.

This study was concerned with an evaluation of the effectiveness of instruction in agricultural mechanics for vocational agriculture students who entered non-farming occupations. The study was suggested by the staff in vocational agriculture of the Arkansas State Department of Education and was a cooperative endeavor of the University of Arkansas and the Arkansas State Department of Education. The present revision of the course of study in agricultural mechanics has been in effect since the school-year 1960-61 and a number of vocational agriculture students have graduated and entered non-farming occupations since that time. If the revised course in agricultural mechanics, which represents about 50 percent of the class time spent in vocational agriculture, is not meeting the needs of the students, this fact should be made known and curriculum changes made accordingly. It is a valid assumption that the agricultural mechanics course as now organized is providing instruction in the knowledge and skills needed in farming occupations. This study is designed to supply the data

needed to determine whether agricultural mechanics courses as now organized are providing instruction in skills needed in non-farming occupations.

Related Research and Background Information

A review of the literature concerned with the teaching of agricultural mechanics revealed that no specific studies have been made in the evaluation of revised courses of study in agricultural mechanics designed for students who entered non-farming occupations . Studies have been made in a number of states showing the broad categories of occupations that former students of vocational agriculture enter. George Hurt, state director of vocational agriculture in Texas reported that about 60 percent of former vocational agriculture students who were available for employment upon the completion or graduation from high school in May 1964 entered farming and related agricultural occupations. Only 1.7 percent were unemployed./1 The percentage of students who entered farming in Texas was somewhat higher than the comparable percentage for Arkansas.

A study designed to determine the occupational status of former high school students in Virginia indicated that 72 percent of the representative sample of high school students in vocational agriculture completed high school and 28 percent left school before graduation. The data of the study indicated that 26 percent entered farming occupations, 11 percent entered occupations related to farming, and 25 percent entered occupations related to mechanical training received in schools and classes in vocational agriculture. Occupations involved in building construction, electricity, mechanics and machine shop were included in this latter category. The

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/1 Vocational Agriculture Teacher Association of Texas, News Release, Austin, Texas, December 1964.

percentage in each of the above categories was higher for students who had completed four years of vocational agriculture than for students who had completed only one year of vocational agriculture./2

The Georgia State Department of Education reported that about 19 percent of a random sample consisting of 9,293 students who completed one or more years in vocational agriculture for the three-year period, 1960-1963 entered farming occupations. A total of 24 percent entered occupations related to agriculture such as those concerned with feed; fertilizer; packing; processing and grading agricultural products; farm machinery; livestock; horticulture; forestry; selling and/or buying farm products together with employment growing out of instruction in farm mechanics./3

A recent study of off-farm agricultural occupations in New York State indetified 213 job titles in a selected sample of 16 school districts in which vocational agriculture was included in the secondary school curriculum. An estimate based on the data of the study indicated that 28,685 full time workers and 16,841 part time workers were employed in these areas in the school year 1963-64. The study indicated that employment opportunities in these occupations were increasing and curriculums in vocational agriculture should emphasize (1) agricultural business and agricultural mechanics for prospective workers in all occupational groupings; (2) plant science for prospective workers in crops, marketing and processing, forestry and soil conservation, wild life and recreation, ornamental horticulture, and agricultural service occupations; (3) animal science for prospective

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/2 Virginia Vocational Agriculture Staff, A Follow-up Study of Students of Vocational Agriculture in Virginia who Graduated or Dropped Out of School in 1954, 1957, 1960 and 1963. Mimeograph, State Department of Education, Richmond, September, 1963.

/3 Unpublished data, Vocational Agriculture Service, State Department of Education, Atlanta, Georgia, 1964

workers in livestock and dairy manufacturing and processing, and farm service occupations; and (4) forestry, conservation and outdoor recreation for prospective workers in these fields./4

Ralph R. Royster/5 indicated that the training in vocational agriculture in Indiana is inadequate to prepare students completely for non-farming occupations, and that it is impractical for schools to educate students in all skills in specific non-farming occupations. Graduates in vocational agriculture indicated a greater need for more training in farm shop work than in any other areas of vocational agriculture.

A New York study indicated that separate training programs for occupations did not appear feasible in most high schools, but that vocational agriculture can meet certain needs of employees in related occupations./6

These studies indicate that the proportion of former vocational agriculture students who enter farming occupations varies among the states but in most states the percentages are somewhat discouraging. These low percentages of former students who enter farming in many geographical areas of the United States make it somewhat difficult to justify the cost of offering vocational agriculture for students who enter the occupation of farming in these areas. However, when the number who enter occupations

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/4 Cushman, Harold R., Virgil E. Christensen, and Garry R. Bice, A Study of Off-Farm Agricultural Occupations. Agricultural Education Division, Rural Education Department, New York State College of Agriculture, Cornell University, Ithaca, 1965.

/5 Royster, Ralph R., Analyses of Non-Farming Agricultural Occupations in Indiana, University of Missouri Bulletin, Volume 61, Number 30, The University, June 1960.

/6 Tom, F.K.T., Charles W. Hill, and Kingsley L. Grune, Employment Opportunities in Certain Occupations Related to Farming in the Syracuse, New York, Economic Area, Mimeograph, New York State College of Agriculture, Cornell University, Rural Education Department, Ithaca, June 1961.

related to agriculture, and the number who enter occupations of a mechanical nature for which they received some knowledge and skill in agricultural mechanics, are taken into account, the costs involved can be justified.

Objectives

This study is designed to answer the following questions concerning the occupations of former vocational agriculture students who enrolled in Vocational Agriculture II in Arkansas secondary schools in 1960-61.

(1) What kinds of non-farming occupations do students in vocational agriculture enter?

(2) What relation does the number of years in vocational agriculture have to the non-farming occupation selected by the graduate?

(3) What mechanical skills do these students acquire that are useful in non-farming occupations?

(4) What additional skills are needed by these former students in their selected occupations?

(5) What changes, if any, should be made in the course of study in agricultural mechanics to better education students for non-farming occupations?

It is contemplated that the recommendations made as a result of this study will be utilized where feasible in making the necessary changes and improvements in the course offerings in agricultural mechanics in the 273 school districts offering courses in vocational agriculture throughout the state of Arkansas.

Procedure

This study was statistical in design and the recommendations were based

on data obtained in a schedule designed for teachers and former students in vocational agriculture. The schedule was prepared as a result of discussions held with members of the state supervisory staff and teacher education staff of the University of Arkansas. Copies of this first schedule were taken to three teachers of vocational agriculture who were asked to try it out and evaluate it. Some changes were made in the original schedule and the final one was agreed upon by the advisory group of supervisors and teacher educators (see Appendix).

The members of the advisory group discussed the problem of securing an adequate and reliable sample and decided that it would be necessary to limit the study to all teachers in the state who had been in the same school since 1960-61. It was agreed that these teachers would more likely know where the former students were located and what they were doing.

The schedules were distributed to the teachers in a series of eleven group meetings held through the state. The author explained the purpose of the study and how the schedule was to be completed. It was suggested that each teacher involved in the study examine the class roll for Vocational Agriculture II in 1960-61 and tabulate the names and other information available for each student who entered an occupation other than farming. Teachers were asked to omit the names of all students who entered military service or college from the names shown on the class rolls. The data of the schedules were designed for former students who entered occupations related to agriculture and occupations not related to agriculture after graduating or dropping out from high school.

After the teacher tabulated all the information available to him he was asked to convey the schedule or its contents to each of the students concerned and secure the information about the nature of his occupation,

the extent to which the information and skills acquired in his occupation were used in the occupation and what additional skills not acquired were needed. The teachers were requested to send the completed schedules to the state director of vocational agriculture who in turn conveyed them to the author.

The author of this study visited a number of agricultural mechanics shops throughout the state. These visits were made for the purpose of observing the arrangement of the shop, the number of agricultural mechanics areas for which equipment was available, housekeeping practices followed in the shop, and the shop teaching plans. The information obtained as a result of these visits was used in formulating some of the recommendations of this study.

Schedules were given to 179 of the 326 teachers of vocational agriculture in Arkansas. A total of 802 usable returns were received from 147 teachers in 64 of the 75 counties of the state (Figure 1). The number of schedules received per school varied from one to 12 with an average of 5.4 per school.

The 802 students involved in the study represented about 15 percent of the total enrollment in Vocational Agriculture II in 1960-61, and an estimated 26 percent of the students from that class who entered non-farming occupations. The non-farming occupations included occupations related to farming and those not relating to farming.

Agriculturally related occupations included a variety of occupations in such industries as poultry, dairy products, meat, vegetables, and berry packing and processing; grain processing and storage; cotton ginning, compressing and storage; feed and fertilizer manufacture and sale;

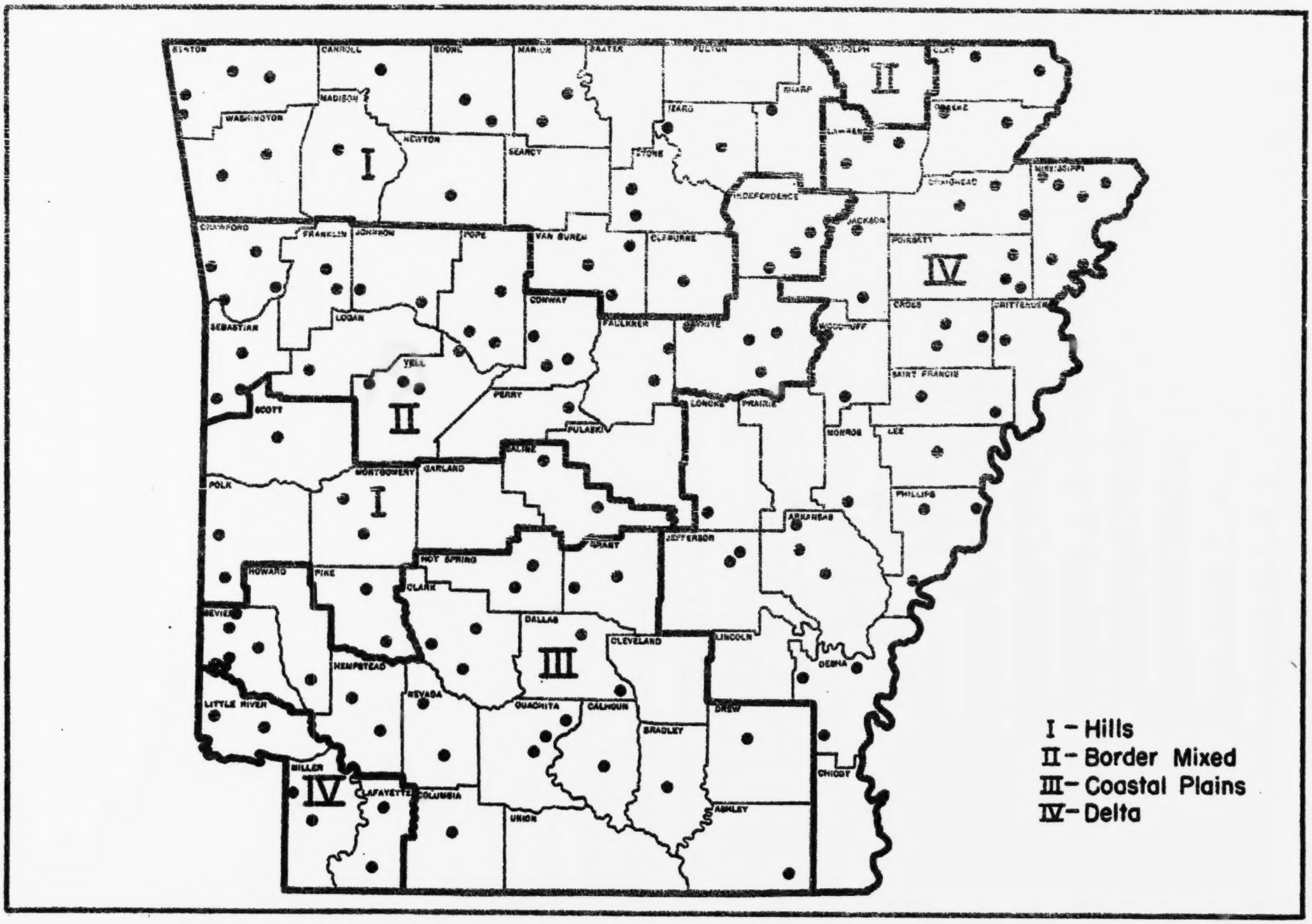

FIG. I. Designation of Topographical Areas and Schools Participating in the Study of Former Vocational Agriculture Students Who Entered Non-Farm Occupations

hatchery operation and management; and farm machinery sales and service. These various occupations involved selling, assembly line work, inspecting, supervising, grading, and delivering. Seventeen (about 2.1 percent) of the 802 students who had entered non-farming occupations upon leaving school were unemployed at the time the survey was made.

A total of 130 personal letters were written to students who failed to reply to the question "What agricultural mechanics skills are needed in your work that were not offered in your course in agricultural mechanics." Only 18 replies were received in response to these personal letters. Some of the replies to the questions in the letters and information on the schedules are shown in Chapter III.

A code sheet was prepared for the data shown on the schedules (see Appendix). The data were then placed on punched cards, one card for each student participating in the study. The sorter was used for grouping the cards into the various categories needed for the study of the data. After the data were processed and converted into tables the tabular information was examined and discussed by the advisory group of supervisors and teacher educators. The recommendations of this study shown in Chapter IV are the result of these discussions.

CHAPTER II

ANALYSIS OF DATA

The purpose of this chapter was to determine from the survey data the kinds of non-farming occupations in which former vocational agriculture students were employed, and whether or not the skills they acquired in agricultural mechanics were used in these occupations. Additional information is shown concerning the stated need for skills not acquired in agricultural mechanics and the relationship of such factors as topography of the county, size of school district, and years of experience of teacher, to skills acquired and needed. Some basic data concerned with years of vocational agriculture completed, graduation from high school, and mobility of students are included.

The Students Participating

The data indicated that most of the former vocational agriculture students who participated in the study were high school graduates (Table 1). Only 18 percent of these students failed to graduate from high school. The topography of the county had little effect on the relative number of graduates. A slightly higher percentage of graduates was noted in coastal plains and delta counties.

The average daily attendance of the school district in which the former vocational agriculture students attended high school had no marked effect on the ratio of graduates to non-graduates (Appendix, Table 1). There is some indication that the larger districts had less holding power for the former vocational agriculture students who entered non-farming

TABLE 1. RELATION OF TOPOGRAPHY OF THE COUNTY TO NUMBER OF HIGH SCHOOL GRADUATES, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Topography of county	Number of students	High school graduates	
		Number	Percent
Hills	177	144	81
Border Mixed	185	152	82
Coastal Plains	187	157	84
Delta	253	209	83
Total	802	662	82

occupations, than the smaller districts. The percentage of graduates in districts with an average daily attendance of 2000 to 2499 was 77 percent, and 75 percent for districts with an average daily attendance of 2500 or more students. The corresponding average for districts with an average daily attendance of less than 500 students was 84 percent. The data indicated that about 18 percent of these students dropped out of school and entered the labor force before high school graduation.

About 42 percent of the vocational agriculture students who entered non-farming occupations completed four years of vocational agriculture before they began their occupational careers (Table 2). There was little difference among schools located in hill, coastal plains and delta counties in the percentage of former students who completed four years of vocational agriculture. The percentage of completions for schools in the border mixed counties was somewhat higher than for those located in counties of other topographical areas. About 16 percent of the former students completed only two years of vocational agriculture. There was little variation among schools in the various topographical areas in this percentage. Data from schools located in the hill counties and in the delta counties showed a slightly higher percentage of students who completed only two years of vocational agriculture.

More former students who entered non-farming occupations from small school districts tended to take four years of vocational agriculture than did former students from larger school districts (Appendix, Table 2). About 53 percent of the students participating in the study, who were enrolled in school districts with less than 500 students in average daily attendance, completed four years of vocational agriculture. The corresponding percentage for former students in districts with an average daily

TABLE 2. RELATION OF TOPOGRAPHY OF COUNTY TO NUMBER OF YEARS OF VOCATIONAL AGRICULTURE COMPLETED, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Topography of county	Number of students	Number completing years of vocational agriculture indicated				Percentage completing four years
		One	Two	Three	Four	
Hills	177	1	32	75	69	39
Border Mixed	185	1	27	58	99	54
Coastal Plains	187	4	28	83	72	38
Delta	253	2	45	105	101	40
Total	802	8	132	321	341	42

attendance of 2500 or more students was 23 percent. This difference is due in part to the fact that the number of curriculums available for boys in the smaller schools was limited and students did not have a variety of choices.

Most of the former students involved in the study were from schools in which the teacher of vocational agriculture had been teaching 10 or more years (Table 3). Thirty-one percent of the students were taught by teachers with 15 or more years of teaching experience. Teachers with less than 10 years of experience enrolled relatively more students in Vocational Agriculture IV than teachers with more than 10 years of teaching experience. The percentage of former students who graduated from high school was relatively higher for teachers with less than 10 years of teaching experience than with teachers with more than 10 years of teaching experience. These data indicate that the proportionate number of high school graduates and proportionate number of students enrolled in advance courses in vocational agriculture does not increase with an increase in the years of teaching experience of the teacher of vocational agriculture.

Most of the former students participating in the study were employed in the same town in which they were enrolled in Vocational Agriculture II in 1960-61 (Table 4). About 73 percent of the students participating were employed in the same town or county in which they attended high school. This percentage may be somewhat higher than that for all former students who were employed in non-farming occupations because of the fact that the teacher could more easily locate and secure data for the schedules of the former students who were employed in the immediate vicinity of the school. The topography of the county in which the school district was located had some effect on the place of employment. Former students from hill counties

TABLE 3. RELATION OF EXPERIENCE OF INSTRUCTOR, YEARS OF VOCATIONAL AGRICULTURE COMPLETED AND NUMBER OF HIGH SCHOOL GRADUATES, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Experience of instructor	Number of students	Number of students completing years of vocational agriculture				Number of high school graduates
		One or fewer	Two	Three	Four	
Less than 5	140	1	13	57	69	122
5-9	228	2	31	93	102	192
10-14	186	1	37	79	69	145
15 or more	248	6	51	90	101	203
Total	802	10	132	319	341	662

TABLE 4. RELATION OF TOPOGRAPHY OF COUNTY AND PLACE OF EMPLOYMENT WITH REFERENCE TO LOCATION OF HIGH SCHOOL, 785 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO WERE EMPLOYED IN NON-FARMING OCCUPATIONS

Topography of county	Number of students	Place of employment of former student				
		Same Town	Same County	Arkansas	Southwest-ern states	United States
Hills	175	97	40	21	1	16
Border mixed	180	96	41	34	2	7
Coastal plains	184	105	28	30	8	13
Delta	246	135	33	18	1	59
Total	785	433	142	103	12	95

tended to find employment in the same town or county in which the school district was located. There is some indication that students from the delta left their local communities and sought employment in states other than the neighboring states.

There was little relationship between the size of the school district as measured by the average daily attendance and the place of employment of former students who entered non-farming occupations (Appendix, Table 3). There was some indication that former students from school districts having an average daily attendance of less than 500 students tended to find employment in the same town or county in which they attended high school. For example, 77 percent of the former students who attended schools in which the average daily attendance was 500 or fewer students were employed at the time of the study in the same town or county in which they attended high school. The corresponding percentage for former students who were enrolled in schools located in districts having an average daily attendance of 2000 to 2499, was 65 percent.

Most of the former vocational agriculture students who entered occupations other than farming were employed in occupations not related to agriculture (Table 5). A total of 111 former students (14 percent) of the 785 employed former students participating in the study were in occupations in which some knowledge and skill of agricultural subjects were required. There was no appreciable difference among the four topographical areas of the state in the proportion of former students participating in the study who were employed in agriculturally related occupations.

TABLE 5. RELATION OF AVERAGE DAILY ATTENDANCE OF SCHOOL AND NUMBER OF FORMER STUDENTS IN AGRICULTURALLY RELATED OCCUPATIONS, 785 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS

Average daily attendance of district	Number of students	Students in agriculturally related occupations	
		Number	Percent
Less than 500	244	31	12
500-999	220	24	11
1000-1499	134	25	18
1500-1999	51	12	23
2000-2499	74	11	15
2500 or more	62	8	12
Total	785	111	14

The Occupations

The largest number of former students in vocational agriculture who were in non-farming occupations were employed in manufacturing industries (Table 6). Other industrial groups included construction, with 16.2 percent; and automotive, with 10.2 percent of the employed students. These three groups included almost two-thirds of the employed students.

The average daily attendance of the school district had little or no effect on the occupational group in which the students participating in the study were employed (Appendix, Table 4). The manufacturing, construction and automotive industries employed about the same relative number of former students in each of the average daily attendance categories.

Among the more important establishments in which students from schools in the hill counties were employed were service stations, poultry and dairy processing plants, furniture manufacturing plants, and public utilities (Table 7). Former students from schools in the border mixed counties were employed in carpentry and construction industries, appliance manufacturing, and transportation. The more important occupations engaged in by students from schools in the coastal plains counties were lumbering and wood products manufacturing, and personal service occupations. Important occupations in which former students from delta county schools were employed include automotible repair and other automotive, building construction, food processing, metal products manufacturing, the manufacturing of textile products, printing and publishing, sales of agricultural commodities and service occupations.

Most of the former vocational agriculture students were employed as

TABLE 6. OCCUPATIONAL GROUPS IN WHICH 785 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS IN NON-FARMING OCCUPATIONS WERE EMPLOYED

Occupational group	Former students employed	
	Number	Percent
Automotive	81	10.3
Construction	127	16.2
Food Processing	57	7.3
Manufacturing	291	37.1
Printing and publishing	15	1.9
Public utilities	27	3.4
Sales	58	7.4
Service	54	6.8
Transportation	47	5.9
Other	28	3.5
Total	785	100.0

TABLE 7. RELATION OF TOPOGRAPHY OF COUNTY AND TYPES OF OCCUPATIONS IN WHICH FORMER STUDENTS WERE ENGAGED, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Occupations	Number of students in occupation by topography of county				
	Total	Hills	Border-mixed	Coastal Plains	Delta
Automotive - repair	33	6	6	3	18
Automotive - service station	27	11	4	3	9
Automotive - other	21	3	6	2	10
Construction - carpentry	41	10	15	6	10
Construction - buildings	37	6	8	11	12
Construction - other	49	9	15	13	12
Food Processing - poultry and dairy	26	14	7	4	1
Food Processing - other	31	4	9	3	15
Manufacturing - appliances	26	6	11	2	7
Manufacturing - furniture	36	14	12	5	5
Manufacturing - lumber	58	14	3	32	9
Manufacturing - other wood	25	4	2	17	2
Manufacturing - welding	36	3	11	9	13
Manufacturing - metal other	31	10	5	4	12
Manufacturing - textiles	53	8	14	5	26
Manufacturing - other	26	2	10	8	6
Printing and Publishing	15	3	2	2	8
Public utilities	27	10	5	4	8
Retail sales - agricultural	16	1	3	3	9
Retail sales - other	42	8	7	13	14
Service occupations - personal	32	7	2	12	11
Service occupations - other	22	4	4	4	10
Transportation - drivers and chauffeurs	47	11	13	11	12
Other	28	6	6	6	10
Umemployed	17	3	5	5	4
Total	802	177	185	187	253

semi-skilled and skilled workers (Table 8). The number of semi-skilled workers was relatively higher in manufacturing than in other occupational groups. There were relatively more skilled workers in the automotive and construction trades. A total of 19 former vocational agriculture students were classified as supervisors, most of whom were in the construction and manufacturing industries. There were 15 technicians among the former students.

Skills Acquired and Used in Occupations

A total of 648 students representing 82 percent of the students entering non-farming occupations indicated that the skills they had acquired in agricultural mechanics were useful in thier occupation (Table 9). The percentage of students indicating skills acquired and used was higher in the delta than in other topographical areas of the state. There was little difference among the remaining counties in the percentage of skills acquired and used.

The local school districts with an average daily attendance of 2000-2499 reported the lowest percentage (68 percent) of students who acquired skills in agricultural mechanics and used them in their present occupation (Appendix, Table 5). The corresponding percentages for the other districts grouped according to average daily attendance varied from 80 to 85 percent. These data indicated that the students in schools located in various topographical areas and with various groupings of average daily attendance used the skills acquired in about the same proportion.

The former students who entered non-farming occupations indicated that skills acquired in agricultural mechanics in such areas as machinery

TABLE 8. RELATION OF DEGREE OF SKILL ATTAINED IN OCCUPATION AND KIND OF OCCUPATION SELECTED, 785 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO WERE EMPLOYED IN NON-FARMING OCCUPATIONS

Degree of skill	Number of students	Occupation in which former student is employed							
		Auto-motive	Const-ruction	Food Process	Mfg.	Sales	Transp.	Service	Other
Unskilled	62	4	4	7	30	2	0	9	6
Semi-skilled	364	32	57	37	134	10	39	23	32
Skilled	238	32	56	11	99	6	5	14	15
Supervisor	19	1	5	1	7	2	0	1	2
Technician	15	0	4	0	7	0	0	0	4
Clerical	37	3	0	0	11	6	1	6	10
Sales	41	5	0	1	3	32	0	0	0
Other	9	4	1	0	0	0	2	1	1
Total	785	81	127	57	291	58	47	54	70

TABLE 9. RELATION OF TOPOGRAPHY OF COUNTY AND NUMBER OF STUDENTS WHO INDICATED THAT SKILLS ACQUIRED IN AGRICULTURAL MECHANICS WERE USED IN PRESENT OCCUPATION, 785 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO WERE EMPLOYED IN NON-FARMING OCCUPATIONS

Topography of county	Number of students	Students who indicated Skills were used in occupation	
		Number	Percent
Hills	175	140	80
Border mixed	180	143	79
Coastal plains	184	149	81
Delta	246	216	88
Total	785	648	82

maintenance (care and minor repairs of agricultural implements and machines), woodwork, electricity, carpentry and tool fitting, were more frequently used in their present occupation (Table 10). Skills acquired and least used included those in the areas of ropework, glazing, hot metal, and lettering and drawing. For the most part, students who completed four years of agriculture acquired and used more skills in each of the areas than did students who completed less than four years of vocational agriculture. There was more difference in the number of skills acquired and used between students with two and three years than between students with three and four years of vocational agriculture. This was especially true in such skills as machinery maintenance, woodwork, carpentry, gas and electric motors, welding and painting.

The former students employed in the automotive trades indicated that they acquired, and used more frequently, such skills as machinery maintenance, gas motors, arc and gas welding, and electricity; and less frequently such skills as lettering and drawing, and reading blueprints (Table 11).

Former students employed in the construction industry used more frequently skills in carpentry, woodwork, reading blueprints and concrete. Skills less frequently used by these former students included ropework, hot and cold metals, electric motors and gas welding.

A total of 291 former students employed in the various manufacturing industries indicated a high usage of acquired skills involving machinery maintenance, tool fitting, power woodwork and electric motors (Appendix, Table 6).

TABLE 10. RELATION OF YEARS OF VOCATIONAL AGRICULTURE COMPLETED AND KINDS OF SKILLS ACQUIRED IN AGRICULTURAL MECHANICS THAT ARE USED IN PRESENT OCCUPATION, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Skills used in present occupation	Number of students indicating skills by years in vocational agriculture				
	Total	One	Two	Three	Four
Machinery maintenance	349	3	51	140	155
Woodwork	238	3	30	94	111
Electricity	211	2	28	70	111
Carpentry	201	3	19	77	102
Tool fitting	197	2	24	67	104
Electric motors	183	1	25	63	94
Power woodworking	178	1	22	67	88
Gas motors	167	1	22	67	77
Painting	162	1	19	65	77
Arc welding	158	0	21	60	77
Reading blueprints	151	1	15	58	77
Sheet Metal	141	1	18	56	66
Gas Welding	128	1	17	53	57
Cold Metal	121	1	16	48	56
Pipework	120	1	16	39	64
Finishing	109	0	10	45	54
Concrete	105	2	10	35	58
Lettering and drawing	89	0	9	35	45
Glazing	60	0	4	26	30
Hot Metal	60	0	10	21	29
Ropework	27	1	4	15	7
Other	34	0	8	13	13

TABLE 11. RELATION OF KIND OF SKILLS ACQUIRED IN AGRICULTURAL MECHANICS AND USED IN PRESENT OCCUPATION TO TYPES OF OCCUPATIONS IN WHICH 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS ARE EMPLOYED

Skills acquired and used	Types of occupations in which former students are employed: Automotive	Construction	Food Processing	Manufacturing	Retail sales	Service occupations	Transportation	Other	Total
Machinery Maintenance	56	46	23	129	20	17	27	31	349
Woodwork	6	75	15	91	13	15	5	18	238
Electricity	30	42	11	58	18	20	4	28	211
Carpentry	5	80	16	53	15	13	5	14	201
Tool fitting	28	37	11	72	14	10	3	22	197
Electric motors	30	23	15	62	14	14	7	18	183
Power woodworking	11	56	7	76	4	5	4	15	178
Gas motors	46	26	10	31	11	7	27	9	167
Painting	25	49	7	35	15	18	4	9	162
Arc welding	37	30	7	51	6	7	12	8	158
Reading blueprints	9	61	0	48	8	6	2	17	151
Sheetmetal	23	32	7	52	5	7	3	12	141
Gas welding	34	23	5	41	6	6	12	1	128
Cold Metal	23	25	3	40	5	7	8	10	121
Pipework	14	39	7	23	8	11	4	14	120
Finishing	12	43	2	35	5	8	2	2	109
Concrete	3	61	7	15	3	4	3	9	105
Lettering and drawing	8	26	0	26	5	7	1	16	89
Glazing	5	29	0	10	5	8	2	1	60
Hot Metal	14	15	1	15	1	6	4	4	60
Ropework	1	9	1	1	3	4	3	5	27

Skills Needed But Not Acquired

A total of 258 (32 percent) of the former students in vocational agriculture participating in the study who entered non-farming occupations indicated a need for skills in their occupation not acquired in the agricultural mechanics courses (Table 12). These students were fairly evenly distributed among the four topographical areas of the state. The number of former students who needed skills not acquired ranged from a low of 22 percent in school districts with an average daily attendance of 500-999 to a high of 41 percent in school districts with an average daily attendance of 2500 or more (Appendix, Table 7). Although the groupings varied in the percentages referred to above it was noted that in general the percentages were higher in the larger districts. This would seem to indicate that relatively fewer pupils in the smaller schools indicated a need for additional skills not acquired in agricultural mechanics.

The former students indicated a need for additional skills involved in machinery maintenance, reading blue prints, gas motors, and welding in descending frequency of skills reported (Table 13). Skills mentioned less frequently included carpentry, cold metal, hot metal, sheet metal, and concrete.

Former students in automotive and transportation occupations indicated a need for additional skills and information concerned with gas motors, machinery maintenance and welding which were not acquired in agricultural mechanics (Table 14). Former students in the construction industry were in need of additional skills in reading blue prints and gas motors. Former students who were employed in the manufacturing industries indicated a need for additional skills in reading blueprints,

TABLE 12. RELATION OF TOPOGRAPHY OF COUNTY AND NUMBER OF STUDENTS WHO INDICATED A NEED FOR SKILL NOT OFFERED IN AGRICULTURAL MECHANICS, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Topography of county	Number of students	Students indicating skills not offered but needed	
		Number	Percent
Hills	177	54	30
Border mixed	185	63	34
Coastal plains	187	58	31
Delta	253	83	33
Total	802	258	32

TABLE 13. NUMBER OF STUDENTS INDICATING SPECIFIC SKILLS NEEDED IN PRESENT POSITION BUT NOT ACQUIRED IN AGRICULTURAL MECHANICS COURSE, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Number of students indicating	Skill	Number of students indicating	Skill
40	Machinery maintenance	10	Pipe threading & general plumbing
39	Reading blueprints		
33	Gas motors	9	Concrete
29	Gas welding	9	Hot metal
22	Electricity	9	Painting and glazing
21	Electric motors		
19	Lettering and drawing	9	Sheet metal
		9	Tool fitting
18	Arc welding	8	Cold metal
17	General shop	8	Diesel motors
12	Power woodworking	4	Carpentry
		76	Other

TABLE 14. RELATION OF KINDS OF SKILLS NEEDED IN PRESENT OCCUPATION BUT NOT ACQUIRED IN AGRICULTURAL MECHANICS TO TYPES OF OCCUPATIONS IN WHICH FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS ARE EMPLOYED

Skills not acquired but needed	Types of occupations in which former students are employed					
	Automotive and transportation	Construction	Food processing	Manufacturing	Sales and service	Other
Machinery maintenance	10	3	5	11	7	4
Reading blueprints	3	17	1	15	1	2
Gas motors	15	10	4	7	6	0
Gas welding	8	6	1	11	3	5
Electricity	4	0	3	8	2	5
Electric motors	5	4	1	10	3	2
Lettering and drawing	1	6	2	7	2	1
Arc welding	7	5	0	7	0	4
General shop	3	3	0	9	1	1
Power woodworking	0	0	1	11	0	0
Pipework	0	0	2	0	2	2
Concrete	0	6	1	0	0	2
Hot metal	0	1	1	6	0	1
Painting and glazing	1	2	1	4	1	0
Sheet metal	1	0	1	5	1	1
Tool fitting	1	1	1	4	1	1
Cold metal	0	1	2	4	0	1
Diesel motors	2	1	0	1	1	0
Carpentry	0	2	1	1	0	0
Other	11	7	3	28	11	4

machinery maintenance, gas welding and power woodworking. Additional skill needed in machinery maintenance was prominently mentioned by former students who were employed in food processing industries and sales and service occupations. These data indicated that teachers of vocational agriculture should make sure that the skills that will be most frequently needed by former students who enter non-farming occupations are included in the course of study in agricultural mechanics.

CHAPTER III

FORMER STUDENT COMMENTS

Many of the former students who entered non-farming occupations wrote comments concerning the value of the instruction in agricultural mechanics and the need for additional knowledge and skills in this area. Some of the comments indicated the overall value of agricultural mechanics and some comments were concerned with the need for specific skills not ordinarily included in an agricultural mechanics course. A few comments were concerned with the value of agricultural mechanics in and around the home of the student. Some comments made by former students engaged in various kinds of occupations are shown below:

Micro-wire welder. I have utilized most all of the skills that I obtained in agricultural mechanics pertaining to arc welding and gas welding. Other skills or job requirements I use are easily picked up at work.

Assembly line worker. What I have had in agriculture will enable me to do just about any other work the company might give me.

Tire salesman. Agricultural mechanics has helped me in my business of selling to farmers.

Motor mechanic. All skills I use in my job were taught in vocational agriculture.

Power Saw operator. I wish I had had the other two years of agriculture offered. I use some of the things I learned in school every day.

Construction worker. I was well trained for my job in my four years of vocational agriculture

Finished welder. I wish I had had the 4th year. I am sure my job would have been much easier if I had finished school and had the last year of vocational agriculture.

Construction worker. This course (vocational agriculture) has helped me more than any other.

General contractor. I believe that I received some basic training on just about all that is possible, or profitable anyway, in my agricultural mechanics classes.

Automobile parts man. Public speaking has a big part in my present job, trying to get something over to the customer that will please them. I think whatever a student does he will find vocational agriculture will help him. One thing I would like to stress is learning to fill out income tax forms. I failed to learn much about that, but it was my own fault, not the instructor's, because I had one of the finest instructors.

Tractor mechanic. My last job which I held for nine months was a tractor mechanic. I think the agricultural mechanics course should go deeper in work on tractors and mechinery. I found one of my hardest jobs was welding. If the agricultural mechanics course would include more about welding more boys who don't farm would have something to turn to.

Drag line oiler. If I had had some training in agricultural mechanics on servicing heavy equipment, my job would have been much easier.

Lumber truck driver. I needed to learn to scale lumber and to figure the board footage.

Sheet metal worker. I needed more sheet metal, blueprint and layout work, and welding.

Shipper of steel containers. Business management or something about leadership in industry would be of help in my job.

Lumber stacker. I could use more information about lumber and forest products.

Auto mechanic. Electricity, arc and gas welding, electric motors and machinery maintenance in greater detail are needed. We were taught only elementary repair and maintenance.

Printer. Electric motors, electricity, general machinery maintenance, and hot and cold metal were not adequately offered during my attendance at school. These skills are now being adequately taught in the school I attended.

Water department worker. I needed more on sheetmetal, pipe threading, general plumbing, concrete work and gas and arc welding as well as machinery maintenance. These are now offered in the new method of standardized shop teaching in Arkansas vocational agriculture shops.

Truck driver. In my job driving trucks for a trucking company, I find it hard when I am on the road and something happens to the truck, even if it is a minor thing. If I had had any mechanical training in vocational agriculture my job would be easier.

Loom fixer. This is a highly technical job and apprenticeship is the only way it can be learned.

Cosmetologist. I must say I do not use agricultural mechanics skills in my work, but I use them every day at home. I consider agricultural mechanics very important in my every day living.

Some of the comments indicated that a number of Arkansas schools were not following the suggested course of study in agricultural mechanics. Some former students stated on the schedule and in follow-up letters that they had not received instruction in such subjects as welding,

electricity, gas motors and general pipe work. Each of these areas was included in the revised course of study in agricultural mechanics suggested by the vocational agriculture staff of the Arkansas State Department of Education. Some former students indicated that these areas were not offered while they were enrolled in agricultural mechanics but that the schools they attended are now offering them.

A few former students indicated a need for information concerned with business management, public speaking, making out tax forms, and some specialized skills in sheet metal, auto mechanics, and lumbering, not ordinarily included in the secondary school course in agricultural mechanics. Some former students working in occupations concerned with textiles, cosmetology, and others indicated that the skills they needed in their gainful work were ordinarily learned through apprenticeship or special vocational and technical courses. These comments indicated that most former students recognized the fact that agricultural mechanics had supplied much of the knowledge and skill they used in the pursuit of their gainful non-farming occupations.

CHAPTER IV

SUMMARY AND CONCLUSIONS

This study was concerned with the extent to which instruction in agricultural mechanics provided knowledge and skill for non-farming occupations. Data for the study were obtained from 802 former students in vocational agriculture who entered non-farming occupations after leaving high school. The former students surveyed were enrolled in Vocational Agriculture II in 1960-61.

The study was made as a result of previous surveys which indicated that about 72 percent of the former students in vocational agriculture who were available for employment upon leaving school entered occupations other than farming. The content of the agricultural mechanics course in vocational agriculture was revised a few years ago to include more basic skills in mechanics to provide needed instruction for youth who entered non-farming as well as farming occupations.

The schedules for collecting the data of the study were prepared in cooperation with the supervisors and teacher educators in agricultural education. They were distributed to 179 teachers who had been teaching in the same school since 1960-61. A total of 147 of these teachers returned the schedules for 802 former students.

The data indicated that 82 percent of the former students graduated from high school and 42 percent of the graduates and school leavers completed four years of vocational agriculture. Most of these former students (86) percent) were employed in occupations not related to agriculture.

Most of the former students (73 percent) participating in the study were employed in the same county in which they attended high school. There was some indication that former students who attended school in delta counties were more likely to seek work outside their home county than were students from other topographical areas.

The largest number of former students in vocational agriculture who entered non-farming occupation were employed in manufacturing industries, especially lumber and textiles. The automotive and construction industries also employed large numbers of former students. Fewer former students were employed in public utilities, printing, sales, and service occupations. There was some variation among the topographical areas with reference to proportionate numbers employed in a given industry. For example, former students in hill counties were more frequently employed in service stations, poultry and dairy processing plants, and furniture manufacturing.

Most of the former students were employed as semi-skilled and skilled workers. The number of semi-skilled workers was relatively higher in manufacturing than in other occupational groups. There were relatively more skilled workers in the automotive and construction trades.

A total of 82 percent of the students who entered non-farming occupations indicated that the skills they acquired in agricultural mechanics were useful in the occupation in which they were engaged. The percentage of former students indicating skills acquired and used was higher in the delta counties than in other topographical areas of the state.

The former students entering non-farming occupations indicated that

skills acquired in such areas as machinery maintenance, woodwork, electricity, carpentry, and tool fitting were more frequently used in their present occupation. Skills acquired and least used include those in ropework, glazing, hot metal, and lettering and drawing. There was more difference in the number of skills acquired and used between students with two and with three years of vocational agriculture than between students with three and four years of vocational agriculture.

About 32 percent of the former students indicated a need for additional mechanical skills in their occupation not acquired in the agricultural mechanics course. Among the more important additional skills needed were: machinery maintenance, reading blueprints, operation, care and repair of gas motors and welding. Skills less frequently mentioned included carpentry, cold and hot metal, sheetmetal, and concrete. The data indicated that more former students from the larger school districts indicated a need for relatively more additional skills than did students from the smaller school districts.

Conclusions and Recommendations

The data indicated that vocational agriculture students acquired skills in agricultural mechanics that were effectively used in non-farming occupations. Students with relatively few years of work experience have attained semi-skilled and skilled levels of competency in the world of work. The comments from former students indicated that most of them felt that the instruction in agricultural mechanics had definitely increased their employability in occupations involving a knowledge and skill of mechanics.

These facts and other data obtained in the visits to school shops suggest that the agricultural mechanics program should receive more emphasis in the vocational agriculture curriculums of the rural high schools of Arkansas. Some of the emphasis should be placed on the acquisition of modern tools and equipment, the efficient arrangement of the shop, and on housekeeping in the shop. Some of the equipment is obsolete and not suitable for use in agricultural mechanics. Much progress has been made in recent years in improving the courses of study and shop organization in agricultural mechanics. This improvement program should continue.

Arkansas has made substantial progress in recent years in the in-service training of vocational agriculture teachers for the teaching of agricultural mechanics. This program should be continued and expanded to make it possible for all teachers in the state to acquire needed competencies in agricultural mechanics. Some incentive should be offered to encourage each school district to provide modern tools and equipment for the agricultural mechanics shop. The expenditures of some state and Federal funds and the use of some type of rating scale as a means of implementing this need seems appropriate.

It is suggested that consideration be given to increasing the time for agricultural mechanics in Vocational Agriculture IV. This should be done by increasing both the length of the class period and the weeks devoted to agricultural mechanics. An attempt should be made to schedule two consecutive periods per day for agricultural mechanics and this course should occupy about 75 percent of the usual class days devoted to Vocational Agriculture IV for students who expect to enter non-farming

occupations. Emphasis should be placed on the selection of students for this course who will likely enter occupations upon graduation from high school in which mechanical skills are needed.

In this connection it should be pointed out that the vocational agriculture curriculum is the only curriculum available in most rural schools for youth who plan to enter business and industry upon graduation from high school. It is quite unlikely that any other programs will be added in the near future. The vocational industrial day trade classes are not ordinarily offered in the rural schools and the future trend will be to confine these largely to area and other special types of vocational schools. Then too, the kinds of knowledge and skills needed by students who enter non-farming occupations upon leaving high school are not necessarily offered in vocational industrial day trade classes. The skills needed for the most part are non-specialized adaptable to assembly line occupations or those that require less specialization than the usual vocational industrial type occupations.

The vocational agriculture teacher is probably better qualified or has potentialities for being better qualified for teaching these students than any other type of teachers including specialized day trade teachers. The instruction needed is on non-specialized skills and information and the skills to be included should be selected from the list of skills needed by students in the occupations found in the local community or county since the data show that most of the students were employed in neighborhood industries. This study emphasizes the need for different types of industrial skills, types that can be adapted to a variety of occupations including those agriculturally related, and skills that can be taught by the local teacher of vocational agriculture qualified for instruction of this nature.

APPENDIXES

STATISTICAL TABLES

SCHEDULE

CODE SHEET

TABLE 1. RELATION OF AVERAGE DAILY ATTENDANCE OF SCHOOL DISTRICT AND NUMBER OF HIGH SCHOOL GRADUATES, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Average daily attendance in district	Number of students	Graduates	
		Number	Percent
Less than 500	251	212	84
500 - 999	225	187	83
1000 - 1499	136	113	83
1500 - 1999	52	45	86
2000 - 2499	74	57	77
2500 or more	64	48	75
Total	802	662	82

TABLE 2. RELATION OF AVERAGE DAILY ATTENDANCE OF SCHOOL DISTRICT AND YEARS OF VOCATIONAL AGRICULTURE COMPLETED BY 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Average daily attendance in district	Number of students	Number of years of vocational agriculture completed				Percentage completing four years
		One	Two	Three	Four	
Less than 500	251	2	29	88	132	53
500 - 999	225	5	35	81	104	46
1000 - 1499	136	1	18	60	57	42
1500 - 1999	52	1	14	22	15	29
2000 - 2499	74	0	18	38	18	24
2500 or more	64	1	18	30	15	23
Total	802	10	132	319	341	42

TABLE 3. RELATION OF AVERAGE DAILY ATTENDANCE OF SCHOOL DISTRICT AND PLACE OF EMPLOYMENT WITH REFERENCE TO LOCATION OF SCHOOL, 785 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO WERE EMPLOYED IN NON-FARMING OCCUPATIONS

Average daily attendance in district	Number of students	Former students employed in			
		Same town or county as school		Other than same town	
		Number	Percent	Number	Percent
Less than 500	244	189	77	55	23
500 - 999	220	157	71	63	29
1000 - 1499	134	101	75	33	25
1500 - 1999	51	35	69	16	31
2000 - 2499	74	48	65	26	35
2500 or more	62	45	72	17	28
Total	785	575	73	210	27

TABLE 4. RELATION OF AVERAGE DAILY ATTENDANCE OF SCHOOL AND KIND OF OCCUPATION SELECTED BY 785 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO WERE EMPLOYED IN NON-FARMING OCCUPATIONS

Average daily attendance	Number of students	Number of students in the industry indicated							
		Auto-motive	Const-ruction	Proc.	Mfg.	Sales	Service	Transportation	Other
Less than 500	244	21	47	13	97	12	11	21	22
500 - 999	220	25	33	13	86	14	17	13	19
1000 - 1499	134	16	21	15	42	16	7	6	11
1500 - 1999	51	3	7	4	21	2	8	3	3
2000 - 2499	74	9	10	8	24	8	5	2	8
2500 or more	62	7	9	4	21	6	6	2	7
Total	785	81	127	57	291	58	54	47	70

TABLE 5. RELATION OF AVERAGE DAILY ATTENDANCE OF SCHOOL DISTRICT AND NUMBER OF STUDENTS WHO INDICATED THAT SOME SKILLS ACQUIRED IN AGRICULTURAL MECHANICS WERE USED IN PRESENT OCCUPATION, 785 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO WERE EMPLOYED IN NON-FARMING OCCUPATIONS

Average daily attendance in district	Number of students	Students who indicated some skills were used	
		Number	Percent
Less than 500	244	200	80
500 - 999	220	186	82
1000 - 1499	134	115	84
1500 - 1999	51	44	85
2000 - 2499	74	50	68
2500 - or more	62	53	82
Total	785	648	82

TABLE 6. RELATION OF MANUFACTURING OCCUPATIONS ENGAGED IN BY FORMER VOCATIONAL AGRICULTURE STUDENTS AND SPECIFIED SKILLS ACQUIRED IN AGRICULTURAL MECHANICS THAT WERE USED IN OCCUPATIONS OF 291 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO WERE EMPLOYED IN MANUFACTURING OCCUPATIONS

Manufacturing occupation	Students in occupation	Students acquiring skills indicated below used in occupation					
		Sheet Metal	Hot & Cold Metal	Blue-print	Tool fitting	Elec-tricity	Machinery maintenance
Appliances	26	10	7	9	7	5	11
Furniture	36	8	6	19	13	3	14
Lumber & Wood	83	2	8	6	18	7	34
Metals (Ex: welding)	67	23	25	24	17	19	28
Textiles	53	2	5	6	11	18	29
Others	26	8	4	10	6	6	13
Total	291	53	55	74	72	58	129

TABLE 7. RELATION OF AVERAGE DAILY ATTENDANCE OF DISTRICT AND NUMBER OF STUDENTS WHO INDICATED A NEED FOR SKILLS NOT OFFERED IN AGRICULTURAL MECHANICS, 802 FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS WHO ENTERED NON-FARMING OCCUPATIONS

Average daily attendance in district	Number of students	Students indicating skills not offered but needed	
		Number	Percent
Less than 500	251	86	34
500 - 999	225	50	22
1000 - 1499	136	54	40
1500 - 1999	52	15	30
2000 - 2499	74	27	36
2500 or more	64	26	41
Total	802	258	32

A SURVEY OF FORMER VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS ENGAGED IN OCCUPATIONS RELATED TO FARMING AND NOT RELATED TO FARMING

This survey is concerned with persons who were enrolled in Vocational Agriculture II in 1960-61 and who are presently engaged in occupations related to farming and not related to farming (Columns 5 and 6, Form 7A), and the extent which information and skills acquired in agricultural mechanics is utilized in their work.

Directions: Please complete each of the following items which pertain to you and your present occupation.

___ 1. Name_____

___ 2. Address_____

___ 3. School_____

___ 4. Years of Vo-Ag completed (Check one): ____2 years ____3 years ____4 years

___ 5. High School graduate (Check one): ____yes ____no

___ 6. Name kind of industry in which employed at present:_____

_____

___ 7. Describe the work you do:_____

_____

_____

___ 8. Are information and skills acquired in agricultural mechanics in vocational agriculture utilized in present occupation: ____yes ____no

___ 9. If yes, which areas of mechanics are utilized? (Check only the areas that apply to your work.)

___ _____	Woodworking	___ _____	Lettering & drawing
___ _____	Sheetmetal	___ _____	Reading blueprints
___ _____	Finishing	___ _____	Tool fitting
___ _____	Painting	___ _____	Electricity
___ _____	Glazing	___ _____	Pipe threading & general plumbing
___ _____	Cold metal	___ _____	Arc welding
___ _____	Hot metal	___ _____	Gas welding
___ _____	Ropework	___ _____	Gas motors
___ _____	Concrete	___ _____	Electric motors
___ _____	Carpentry	___ _____	Machinery maintenance
___ _____	Power woodworking	___ ___	_____

___10. What agricultural mechanics skills are needed in your work that were not offered in your courses in vocational agriculture?

_____

_____

_____

_____

CODE SHEET FOR RESEARCH PROJECT
EVALUATION OF THE EFFECTIVENESS OF INSTRUCTION IN AGRICULTURAL MECHANICS
FOR VOCATIONAL AGRICULTURE STUDENTS IN ARKANSAS
WHO ENTER NON-FARMING OCCUPATIONS

Code Sheet

Column

1-2 County and topographical areas (see attached schedule)

3-4 Number of school

5 Average daily attendance
0 Not indicated
1 Less than 500
2 500 - 999
3 1000 - 1499
4 1500 - 1999
5 2000 - 2499
6 2500 or more

6-7 Experience of teacher (years)

8 Years of Vocational Agriculture completed

9 High School graduate
0 Not indicated
1 Yes
2 No

10 Address of student
0 Not indicated
1 Same as that of school
2 Same county as that of school
3 State of Arkansas
4 S.W. Region (La., N. Mex., Okla., Texas)
5 United States
6 Other

Kind of Industry

11 Employment
0 Not indicated
1 Unemployed
2 Employed

12 Automotive - repair
0 Not indicated
1 Unskilled
2 Semi skilled (apprentice, helper, attendant)
3 Skilled (machinist, electrician, carpenter, plumber)

4 Supervisor
5 Technician
6 Clerical
7 Salesman
8 Professional
9 Owner or part owner

13 Automotive - gasoline service station
See above

14 Automotive - other

15 Construction trades - building - carpentry

16 Construction trades - building - other

17 Construction trades - other

18 Food Processing - poultry and dairy

19 Food Processing - other

20 Manufacturing - appliances

21 Manufacturing - furniture

22 Manufacturing - lumber

23 Manufacturing - other wood products

24 Manufacturing - metal products - welders

25 Manufacturing - metal products - other

26 Manufacturing - textiles

27 Manufacturing - other

28 Printing and publishing

29 Public utilities

30 Retail sales - agricultural

31 Retail sales - other

32 Service occupations - personal

33 Service occupations - other

34 Transportation - bus, tractor and truck drivers

35 Other

36 Agriculturally related or non-related occupations
0 Not indicated
1 Related
2 Not related

37 Are information and skills used in present occupation
0 Not indicated
1 Yes
2 No

38 Woodworking
0 Not indicated
1 Yes
39 Sheetmetal
40 Finishing
41 Painting
42 Glazing
43 Cold metal
44 Hot metal
45 Ropework
46 Concrete
47 Carpentry
48 Power woodworking
49 Lettering & drawing
50 Reading blueprints
51 Tool fitting
52 Electricity
53 Pipe threading & general plumbing
54 Arc welding
55 Gas welding
56 Gas motors
57 Electric motors
58 Machinery maintenance
59 Other _____

60 What agricultural mechanics skills are needed in your work that were not offered in your courses in vocational agriculture
0 Not indicated
1 Yes
2 None

61 Sheetmetal
62 General shop work
63 Painting, glazing
64 Cold metal
65 Hot metal
66 Concrete
67 Carpentry
68 Power woodworking
69 Lettering & drawing
70 Reading blueprints
71 Tool fitting
72 Electricity
73 Pipe threading & general plumbing
74 Arc welding
75 Gas welding
76 Gas motors
77 Diesel motors
78 Electric motors
79 Machinery maintenance
80 Other